

Appl. No. 10/707,838
Amdt. dated December 22, 2004
Reply to Office action of September 23, 2004

REMARKS/ARGUMENTS

Claims 1-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Kunisawa et al. (6,558,239). Claim 8 is objected to as being dependent upon a rejected base, but would
5 be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Claims 9-14 are allowed. Claims 15-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hakomori (2003/0134570). Claims 9-14 are allowed.

10 **1.Rejection over claim 24 under 35 U.S.C. 112:**

Claim 24 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 24 recites the limitation "wherein the EBR process" in
line 1. There is insufficient antecedent basis for this limitation in the claim.

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The Applicants accept the Examiner's comment. In fact, the "EBR process" is "Edge-Bead Removal process", which has the same meaning as "the first cleaning process" in the independent claim 15. Therefore, "the EBR process" in claim 24 is corrected and replaced with "the first cleaning process" as shown in the section of
20 "Amendments to the Claims" for meeting 35 U.S.C. 112.

2. Rejection over claims 1-7 under 35 U.S.C. 102(e):

Claims 1-7 are rejected under 35 U.S.C. 102(e) 12 being anticipated by Kunisawa et al. (6,558,239), for reasons of record that can be found on pages 2-3 in the Office action
25 identified above.

According to the application of Kunisawa et al., they disclose a polishing apparatus for cleaning a semiconductor wafer, which utilizes a polishing pad for performing a

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polishing process, and utilizes a tape polishing device to clean the wafer edge (Fig. 3A and Fig. 5). *However, Kunisawa et al. never teach to use a buffing pad to perform a buffing polishing process to the semiconductor wafer.* In addition, the tape polishing device of Kunisawa et al. for cleaning the wafer edge includes three pressers (59a, 59b, and 59c in Fig.6) for pressing the polishing tapes 51 to clean the side edge, the face side, and the reverse side of the peripheral portion of the wafer. Accordingly, *Kunisawa et al. is silent about using three separate bevel pads, a front side bevel pad, a backside bevel pad, and an edge pad, to polish the front side bevel, the backside bevel, and the edge of the semiconductor wafer respectively* (Fig.8 of this application), which are limitations in claim 5 of this application.

Since claim 8 is objected and would be allowed if rewritten in independent form, the objected claim 8 and the rejected claim 6 are merged into claim 1 to form the amended claim 1. The amended claim 1 therefore should become allowable. Claims 6 and 8 are therefore cancelled. And the claim 7 is amended for that it was originally dependent upon claim 6. No new matter is introduced. The claims 2-5, and 7 are dependent on the amended claim 1 and should be allowable if the amended claim 1 is allowed. Allowance of the amended claim 1 and claims 2-5, 7 is hereby requested.

3. Rejection over claims 15-24 under 35 U.S.C. 102(e):

Claims 15-24 are rejected under 35 U.S.C. 102(e) as being anticipated by Hakomori (2003/0134570), for reasons of record that can be found on page 3 in the Office action identified above.

For clarifying this application, the limitation of claim 22 is merged into claim 15, and claim 22 is therefore amended for further specifying this application according to Fig.8. No new matter is introduced. The amended claim 15 is listed below for describing the difference between the amended claim 15 of this application and Hakomori's application.

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- Claim 15: "An all-in-one polishing process for a semiconductor wafer, the semiconductor wafer being positioned on a polishing platen of a CMP device and comprising a top surface, a bottom surface and an edge bevel surface, the edge bevel surface comprising a front side bevel, a backside bevel and an edge, the top surface comprising at least one first material layer, the edge bevel surface comprising a second material layer, the edge comprising a notch for engaging with a notch pad of the CMP device to locate the coordination of the semiconductor wafer on the wafer stage, the polishing process comprising:
- 5 performing a rim CMP process by utilizing at least one front side bevel pad, at least one backside bevel pad, and at least one edge pad to polish and completely remove the second material layer respectively on the front side bevel, the backside bevel, and the edge of the semiconductor wafer;
- 10 performing a first cleaning process to clean the top surface, the front side bevel, the backside bevel and the edge of the semiconductor wafer; and
- 15 drying the semiconductor wafer."

Accordingly, one of the characteristics of the amended claim 15 is that the all-in-one polishing process comprises using at least three front side bevel pad (70), backside bevel pad (72), and edge pad (74) for polishing and removing materials respectively on the front side bevel, the backside bevel, and the edge of the semiconductor wafer (Fig. 8 and the forth paragraphs in section of DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT of this application).

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Referring to the application of Hakomoi, he discloses a wafer edge polishing system including a wafer edge polishing unit (numeral 4 in Fig.5), a wafer cleaning unit (5), a wafer drying unit (6), and a wafer inspection unit (7). According to the specification of Hakomoi, a wafer will be transferred into the wafer inspection unit (7) after a wafer edge polishing process. In the wafer inspection unit (7), the polished surfaces of the wafer is

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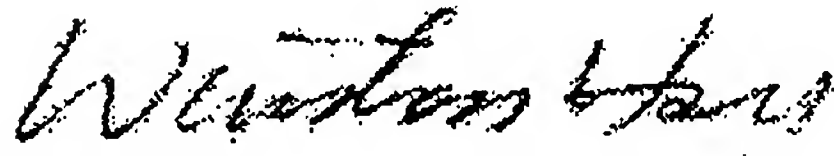
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inspected, and if it is judged as poorly polished, it is re-carried to the wafer edge polishing unit (5). However, *Hakomoi does not teach using three edge polishing pads, the front side bevel pad, the backside bevel pad, and the edge pad, to polish the front side bevel, the backside bevel, and the edge of the wafer respectively.* Therefore, the applicants believe
5 the amended claim 15 is quite different from the disclosure of Hakomoi. Reconsideration of the amended claim 15 is hereby requested.

Since claims 16-24 are dependent upon the amended claim 15, they should be allowed if the amended claim 15 is allowed. Reconsideration of claims 16-24 are politely
10 requested.

Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

15 Sincerely yours,



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20 Winston Hsu, Patent Agent No. 41,526
P.O. BOX 506, Merrifield, VA 22116, U.S.A.
Voice Mail: 302-729-1562
Facsimile: 806-498-6673
e-mail : winstonhsu@naipo.com

25 (Please contact me by voice mail if you need a telephone communication.)